Operating Manual

For

ForceCut 42i

110v/220v PFC 40AMP Plasma Cutter

Table of Contents:

PG. 3: Thank you From LONGEVITY

PG. 4-6: Warranty/Shipping Damage/Order Information

PG. 7-9: Warning and Safety Information

PG. 10: Specifications and Ratings

PG. 11: Installation

PG. 12: Front Panel

PG. 13: Basic Operation

PG. 14: Cutting Methods

PG. 15: PT-60 Torch Breakdown

PG. 16-18: Troubleshooting

PG. 19: Electrical Schematics Drawing

PG. 20: Routine Maintance

PG. 21: Enjoy your new welding machine from LONGEVITY!

THANK YOU!

We, at LONGEVITY, want to thank you for purchasing our product. You are almost ready to experience Longevity Welding first hand. Longevity definitely appreciates your business and understand that this equipment may be overwhelming to setup and operate so we have prepared a manual that will assist you in understand your new plasma cutter/welder. If you have any questions during or after reading this manual, please feel to contact us! Please take a moment to register your product on our website at www.longevity-inc.com or www.lweld.com

Once again, thank you for choosing Longevity as your main welding supplier!

Longevity Global, Inc.
23591 Foley St
Hayward, CA 94545

Toll-Free Customer Support: 1-877-LONG-INC / 1-877-566-4462
Website: www.longevity-inc.com
Sales: sales@longevity-inc.com
Customer Service: help@longevity-inc.com
Dealers: dealers@longevity-inc.com
Complaints: complaints@longevity-inc.com

Please join our welding forums to share welding tips and tricks, to receive useful information from customers who also use our products, and to be a part of the Longevity™ welding community at www.freeweldingforum.com

Check out LONGEVITY Racing at www.longevity-racing.com

Warranty

LONGEVITY Plasma Cutters, Welders, and Multi-Purpose Welders are covered for specific Parts and Labor warranty at our facility. For detailed information regarding your specific LONGEVITY welder or cutter, please view our Terms and Policies page on our website at the following website link: http://www.longevity-inc.com/terms/

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Shipping Damage

Your machine is insured against damage during shipping. Keep all packing materials and containers in case machine must be returned. We will initiate a claim with the shipping company to cover damage or loss. If there is shipping damage upon opening your package, our customer service team will work with you to get the matter resolved.

In Warranty Service

Customers, who own machines that are in warranty and require service, should contact our Warranty Department by email at help@longevity-inc.com to obtain a return authorization code. In addition to the warranty we offer, we would like for you to register your product on our website at www.longevity-inc.com/resources. Remember, warranty starts from the date of purchase. For your convenience, write your order information below so you can track your order in case you need warranty work.

Order No.: _____

Date of Purchase: _____

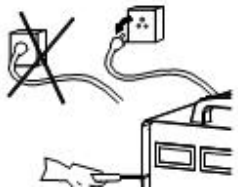
Warranty Period: _____

Out-of-Warranty Service

Customers, who own machines that are out of warranty and require service, should contact us for an estimate. Longevity offers an exchange program on out of warranty units. We also help non LONGEVITY customers with repairs, replacement, and service.

If your unit is not manufactured by Longevity and you cannot receive service from your manufacturer or seller, Longevity will lend out hand. Our warranty policy is also available for all plasma cutters and welders. For more information, please email us at help@longevity-inc.com

Warnings and Safety

Welding and plasma cutting may be dangerous to the operator and to bystanders, if the equipment is not operated properly. Welding or cutting must be performed in accordance with all relevant safety regulations. Carefully read and understand this instruction manual before installing and operating this equipment.	
Changing function modes during welding may damage equipment. Before welding, disconnect the electrode-holder cable from the equipment. A circuit breaker is required to prevent electrical overload of the equipment. Only high quality welding tools should be used.	
Electric Shock can be fatal. Ensure that ground cable is connected in accordance with applicable safety codes. Never touch electrodes, wires, or circuit components with bare hands. Wear dry welding gloves when welding. The operator must be insulated from the work piece.	
Smoke and gas can be harmful to health. Ensure that the working area is well ventilated. Avoid breathing smoke and gas generated during the welding process. Cutting and welding can cause cancer because of the smoke that comes from the welds and cuts.	
Arc-light emission can be harmful to eyes and skin. Always wear a welding helmet, anti-radiation glass, and work clothes while welding. Ensure that people in or near the working area are protected.	
Welding splash is a fire hazard. Keep flammable material away from the work place. Keep a fire extinguisher nearby, and have all personnel trained in	

its use. Surface noise generated while welding or cutting can be harmful to hearing.	
In the event of a machine fault. Refer to this instruction manual. If the fault cannot be determined, contact your local dealer or supplier for assistance.	

Safety Tips

Consider the following tips to ensure safe operation of your welding/cutting equipment:

- Ensure that this welding equipment is installed in an area free of corrosive chemical gases, flammable gases or materials, and explosive chemicals.
- The area should contain little dust, and have a humidity of no more than 80%.
- Operate the welding equipment in an area sheltered from direct sunlight and precipitation. Work area temperature should be maintained at -10□C to +40□C;
- If, because of an overload, the machine suddenly stops, and it is necessary to restart it, leave the internal fan operating to lower the inside temperature.
- Always wear protective clothing and a welding mask to protect your skin.
- Wear safety goggles designed to darken the arc generated by your machine.
- Wear suitable noise protection to protect your hearing.
- Ensure that machine is grounded through the power cord or on the machine case.
- Never operate the machine in bare feet or on a wet floor.
- Never switch the machine off while it's in use. Doing so will damage the internal circuitry.
- Ensure that your circuit breaker is rated to handle the current requirements of your machine.
- Use a UL approved receptacles and plugs with your machine. Never hard wire the machine to main power.
- Work in a well-ventilated area to avoid smoke. Keep your head out of the smoke. Ensure that air is flowing away from you to avoid inhaling smoke.
- Ensure proper ventilation through the machine's louvers. Maintain a distance of at least 12 inches between this cutting equipment and any other objects in the work area.
- Use a screen or curtain designed to keep passer byes from viewing the arc.
- The arc spray and metal spray from machine use may cause nearby fires. Use caution.
- If, after reviewing this manual, you have any problems in setting up or operating your machine, contact us at help@longevity-inc.com.

Operation Manual

Carefully read the operation manual prior to using, installing and maintaining the electric welding machine for the purpose of preventing damages such as fire, electric shock and etc from occurring. Please keep the manual for the reference in the future.

Specifications and Parameters

Rated input	Single-phase，220V/110V，50/60Hz
Rated input current（A）	23.4(220V) 33.7(110V)
Rated input power（KW）	4.63(220V) 3.44(110V)
Adjustment range of current（A）	20～40(220V) 20～30(110V)
Duty cycle（40℃，10 minutes）	40%(220V) 35%(110V)
Max no-load voltage(V)	480 volts
Weight	36 lbs
Dimensions (Length*Width*Height)	18”L x 8”W x 15”H

NOTE: DUTY CYCLE is welding equipment specification, which defines the number of minutes, within a given time interval, during which a given welding machine can safely produce a particular welding current. It is usually expressed as a ratio of the uninterrupted no-load duration to the total time (usually 10 minutes)

Installation

Unpacking

1. Inspect each item for possible shipping damage. If damage is evident, contact your distributor and / or shipping company before proceeding with the installation.

Input Power Connections

Note: Check your power source for correct voltage before plugging in or connecting the unit

Gas Connections

A. Connecting Gas Supply to Unit

Connect the gas line to the inlet port of the gas filter on the rear panel.

B. Check Air Quality

To test the quality of air, put the RUN / SET switch in the SET (down) position, check if there are Any oil or moisture in the air.

Layout Of The Front And Rear Panel

1. **Power Light:** The light will illuminate when the unit is powered on
2. **Temperature /Over-Heat Light:** When the duty cycle is reach, the TEMP will turn on. Once it is safe to operate the machine, the light will turn off. If duty cycle is reached, allow machine to run with the fan on to accelerate cooling.
3. **Tip/Air Light**
   When adequate air pressure is reached, the Tip/Air light should turn on
4. **Pilot/Voltage Light:** The Pilot/Voltage light is illuminated when the machine is ready to use.
5. **Amperage Control Knob:** Allows the user to precisely set the desired amperage output. The machine is limited to 30A when connected to 110v power supply
6. **RUN/SET:** When cutting the, turn the switch to "RUN"; when doing a gas test, turn to the "SET".
7. **Cutting gun connector:** Connector for the PT-60 plasma torch
8. **Ground Clamp:** Connect to the workpiece or a secure ground
9. **Power Cable:** connect to the desired power supply(110v/220v)
10. **Power Switch** turns on or off the machine
11. **Air connector (Note:** air pressure had setted inside. That is 4bar/60psi)

Basic Operation

1. Ensure that all cables are connected to the machine.
2. Ensure that the machine's OFF/ON switch is set to OFF, and plug the machine into the electrical outlet.
3. Connect the air compressor supply line to the air input side on the unit.
4. Turn the ON/OFF switch to ON. The cooling fans should operate and the ON indicator LED or power switch (if applicable) should illuminate.
5. Clean the contact point on the work piece to ensure a good electrical connection. Ensure that no rust of paint is present that could create an open circuit.
6. Connect the ground clamp to the work piece to be cut.
7. Connect the torch to the unit properly.
8. With the pilot arc knob connected, you should get a full continuous arc when the trigger on the torch is pressed.
9. Depress the button on your torch to start the arc and begin cutting.
10. You can test the air to insure that is it properly flowing by selecting Gas (Air) Test. Air will pass through the torch.
11. If necessary remove slag from the under part of the cut using a grinder or chisel.

Cutting Methods

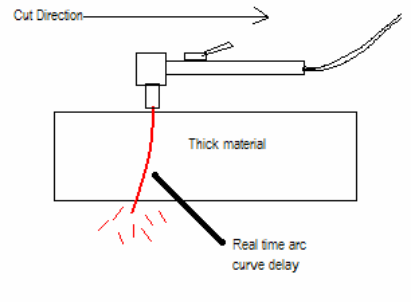
Different material thicknesses require different cutting techniques.

- **Thin material:** Start perpendicular to the work piece. It is unnecessary to angle or start on the edge, as the arc will pass through quickly.
- **Medium material:** Angle the torch tip to avoid damaging the tip. Once the arc passes through the material, you may begin cutting normally.
- **Thick material:** Drill a pilot hole through which to start your arc, or start on the edge of the work piece.

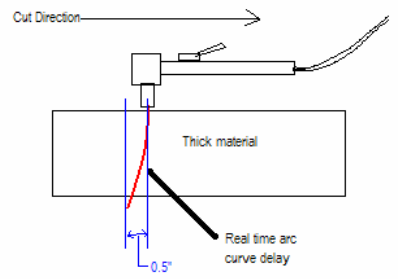
Never cut material on a flat surface. Raise the work piece above the surface to avoid blow back which may burn you or cause fires.

Real Time Arc-Curve Delay

When cutting thick materials you must maintain a steady even motion in the direction of the cut. Moving the torch too quickly causes an arc-curve delay. An arc-curve delay can leave the work piece with uncut sections, requiring you to re-cut those sections, which could distort or damage the work piece.

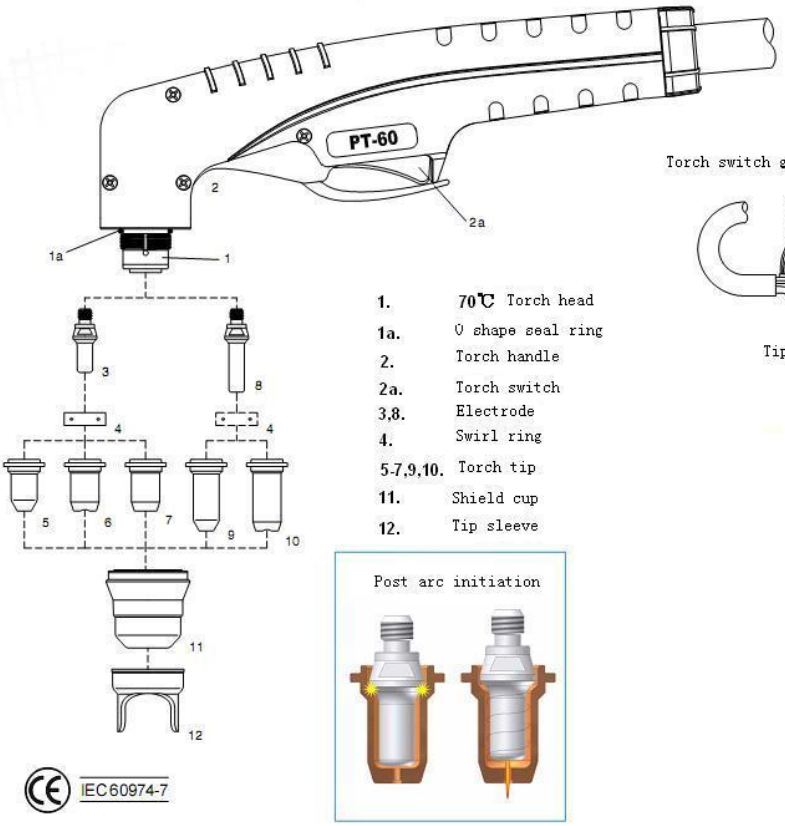


To avoid arc-curve delay, allow the arc to pass completely through the work piece before moving too far ahead. The arc-curve should lag not more than the thickness of the material being cut. In other words, if the work piece is one-half inch thick, the arc curve should lag not more than one-half inch behind the torch, as shown below.



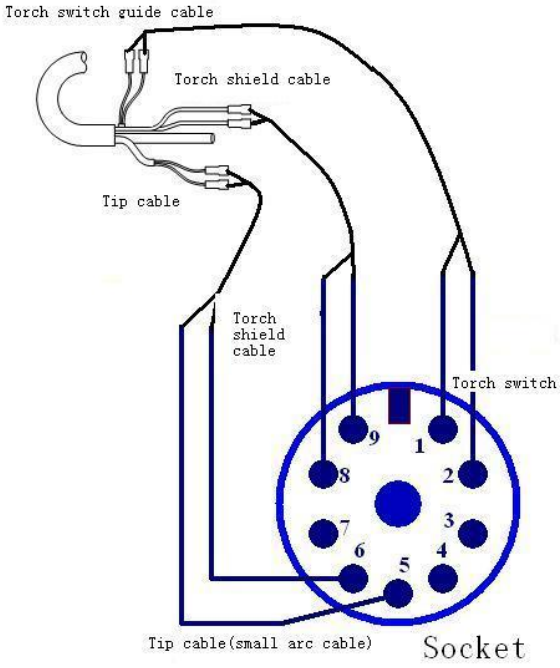
Air plasma cutting torch

TECMO® PT-60



1.	70℃ Torch head
1a.	O shape seal ring
2.	Torch handle
2a.	Torch switch
3,8.	Electrode
4.	Swirl ring
5-7,9,10.	Torch tip
11.	Shield cup
12.	Tip sleeve

Torch cable graphic



Troubleshooting

WARNING

There are extremely dangerous voltage and power levels present inside this unit. Do not attempt to diagnose or repair unless you have had training in power electronics measurement and troubleshooting techniques.

A. The cutting torch fails to ignite the arc, when press on the torch switch, the TIP/GUN/GAS light on.

1. Gas pressure too high, gas test then adjust gas pressure to 4bar/60psi.

B. The cutting torch fails to ignite the arc, when the torch switch is pressed; the TIP/GUN/GAS lamp turns on.

1. The shield cup is improperly installed. Turn off the power source, install the shield cup properly, and then turn on the power source.

C. The cutting torch fails to ignite the arc, when press on the torch switch, the TIP/GUN/GAS lamp on and air feed intermittently.

1.The electrode or nozzle improper installation, turn off the power source, install the electrode or nozzle, and screw shield cup down properly, then turn on the power source.

D .The cutting torch fail to ignite the arc, when press on the torch switch, the TIP/GUN/GAS lamp on and air feed intermittently.

1. Short-circuit for burned-out and other abnormal situation, turn off the power source, and change the electrode and nozzle.

E. Power lamp and temperature lamp on.

1. Air flow blocked, check for blocked air flow around the unit and correct condition.
2. Fan blocked, check and correct condition.
3. Unit is overheated, let unit cool down for at least 5 minutes. Make sure the unit has not been operated beyond Duty Cycle limit, refer to technology parameters in Section 2.
4. Faulty components in unit, return for repair or have qualified technician repair per Service Manual.

F. Torch fails to ignite the arc when torch switch is activated

1. System is in SET mode，change to RUN mode.
2. Faulty torch parts, inspect torch parts and replace if necessary.
3. Gas pressure too high or too low, adjust to proper pressure.
4. Faulty components in unit, return for repair or have qualified technician repair per Service Manual.

G. No cutting output; Torch activated, power source on; Gas flows; Fan operates

1. Torch not properly connected to power supply, check that torch leads are properly connected to power supply.

2. Work cable not connected to work piece, or connection is poor, make sure that work cable has a proper connection to a clean, dry area of the workpiece.

3. Faulty components in unit, return for repair or have qualified technician repair per Service Manual.

4. Faulty Torch, return for repair or have qualified technician repair.

H. Low cutting output

1. Incorrect setting of CURRENT (A) control, check and adjust to proper setting.

2. Faulty components in unit, return for repair or have qualified technician repair.

I. Difficult Starting

1. Worn torch parts (consumables), shut off input power. Remove and inspect torch shield cup, tip and electrode. Replace electrode or tip if worn; replace shield cup if excessive spatter adheres to it.

J. Arc shuts off during operation; arc will not restart when torch switch is activated.

1. Power Supply is overheated (OC/OT lamp on), let unit cool down for at least 5 minutes. Make sure the unit has not been operated beyond Duty Cycle limit. Refer to Section 2 for duty cycle specifications.

2. Gas pressure too low (the TIP/GUN/GAS lamp on when press on torch switch is on), check source for at least 4bar/60psi; adjust as needed. It is need to open the machine cover.

3 Torch consumables worn, check torch shield cup, tip, starter element, and electrode; replace as needed.

4. Faulty components in unit:, return for repair or have qualified technician repair per Service Manual.

K. No gas flow; the power lamp on; Fan operates

1. Gas not connected or pressure too low, check gas connections. Adjust gas pressure to proper setting.

2. Faulty components in unit, return for repair or have qualified technician repair.

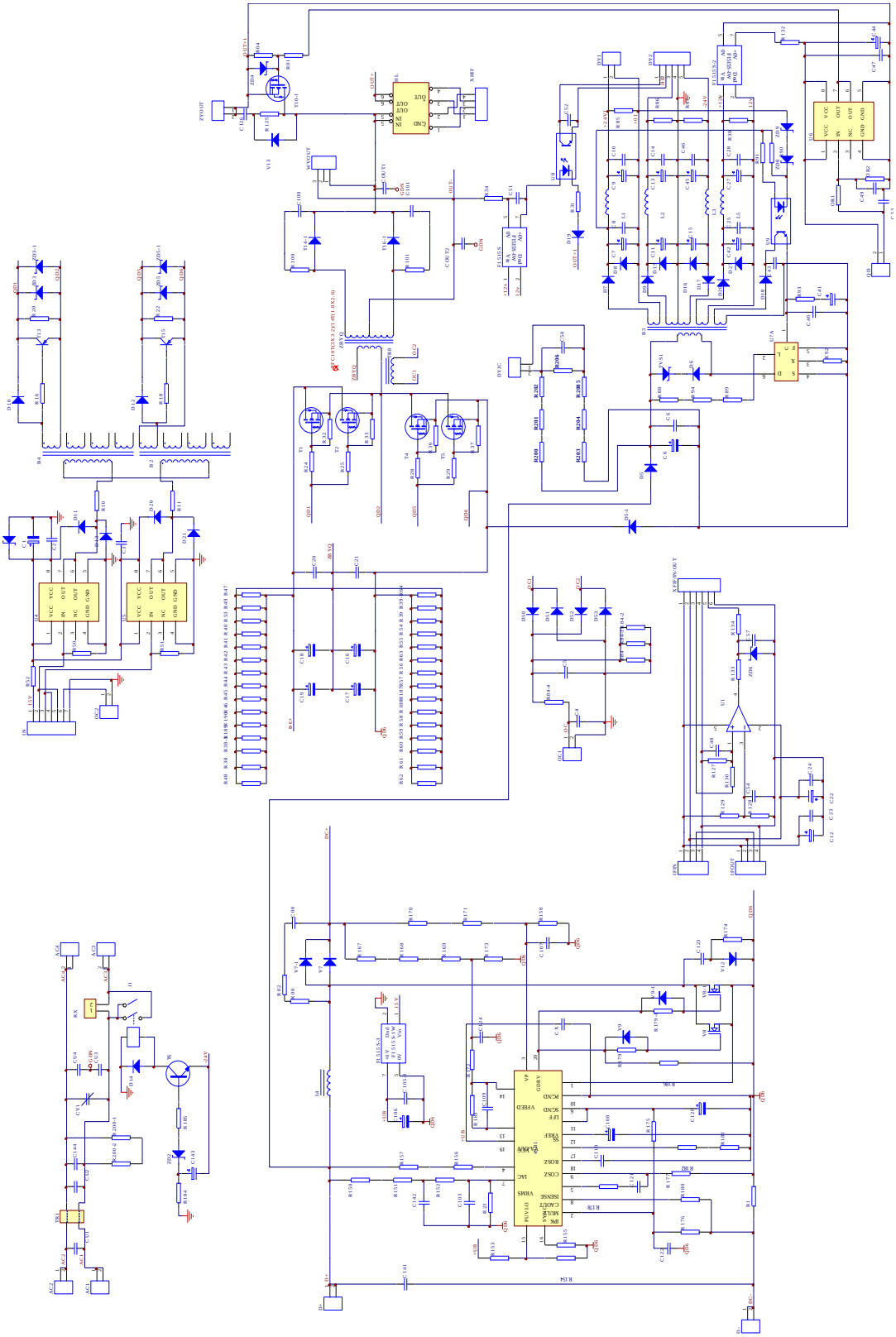
L. Torch cuts but cuts are of low quality

1. Amperage control set too low, increase current setting.

2. Torch is being moved too fast across workpiece, reduce cutting speed.

3. Excessive oil or moisture in torch, hold torch 1/8 inch (3 mm) from clean surface while purging and observe oil or moisture buildup (do not activate torch). If there are contaminants in the gas, additional filtering may be needed.

Electrical Schematics Drawing



Routine Maintenance

The life of your machine and the quality of the work performed using your machine, will be enhanced by practicing periodic routine maintenance.

- At regular intervals, clear dust that may accumulate in the machine using clean and dry compressed air. If the working condition has heavy smoke and pollution, the welding machine should be cleaned once a month.
- Keep the machine exterior clean with mild soap and water.
- Do not walk on or store items on the cables or cords.
- Do not jar, drop, or stack items on top of the machine.
- Always connect the machine to a well-grounded electrical outlet.
- Always check the torch consumables before and after use and ensure that they are clear of obstructions, and that no parts are damaged.
- Replace any worn or damaged consumables before using machine.
- For periods of prolonged non-use, remove cables and store them in their original boxes in a cool dry place.

LONGEVITY® Global, Inc. thanks you for your purchase and the opportunity to be able to serve you. If, after reviewing this manual, you have any problems in setting up or operating your machine, contact us at help@longevity-inc.com.

LONGEVITY® Global, Inc.

Toll-Free 1-877-LONG-INC / 1-877-566-4462

Website: www.longevity-inc.com

Sales: sales@longevity-inc.com

Customer Service: help@longevity-inc.com

Dealers: dealers@longevity-inc.com

Please join our welding forums to share welding tips and tricks, to receive useful information from customers who also use our products, and to be a part of the LONGEVITY® welding community at www.freeweldingforum.com

For the coolest LONGEVITY sponsored race teams plus a complete racing forum that covers everything from Drag Racing to RC Car Racing, please check out www.longevity-racing.com!

Enjoy your new welding machine from LONGEVITY! Thanks again!